

WHAT IS CLAIMED IS:

1. A combustion liner assembly for a gas turbine comprising:

a cap centerbody;

a liner sleeve about said centerbody;

a plurality of primary fuel nozzle cup assemblies within the liner sleeve and about the centerbody;

a venturi downstream of the cap centerbody and nozzle cup assemblies and secured to said liner sleeve;

said liner sleeve having an inlet for receiving dilution air into a plenum between the venturi and the liner sleeve for flow into a dilution zone downstream of the centerbody;

said venturi including generally annular inner and outer sleeves spaced generally radially one from the other;

said outer sleeve extending downstream from a throat of said venturi;

a plurality of rivets interconnecting said liner sleeve and said outer venturi sleeve at spaced circumferential locations about said liner sleeve for minimizing leakage flow of dilution air from the plenum and between the liner sleeve and outer venturi sleeve.

2. A combustion liner assembly according to Claim 1 wherein said rivets are at least ten in number about the liner sleeve and equally spaced from one another about the liner sleeve.

3. A combustion liner assembly according to Claim 1 wherein said rivets are at least twelve in number about the liner sleeve and equally spaced from one another about the liner sleeve.

4. A combustion liner assembly for a gas turbine comprising:

a cap centerbody;

a liner sleeve about said centerbody;

a plurality of primary fuel nozzle cup assemblies within the liner sleeve and about the centerbody;

a venturi downstream of the cap centerbody and nozzle cup assemblies and secured to said liner sleeve;

said liner sleeve having an inlet for receiving dilution air into a plenum between the venturi and the liner sleeve for flow into a dilution zone downstream of the centerbody;

said venturi defining a throat area downstream of the centerbody and including generally annular inner and outer sleeves spaced generally radially from one another;

said venturi outer sleeve having a plurality of holes in communication with said plenum for flowing dilution air between the inner and outer venturi sleeves;

said inner and outer sleeves of said venturi having wall portions extending in an axial upstream and radial direction toward said liner sleeve and terminating in respective overlapped flanges extending in a generally axial direction; and

an annular weld about and sealing between the overlapped flanges to preclude dilution air leakage flow from said plenum.

5. A combustion liner assembly according to Claim 4 wherein said flanges extend in an axial downstream direction away from said centerbody and said nozzle cup assemblies.

6. A combustion liner assembly according to Claim 4 wherein said outer venturi sleeve extends downstream from a venturi throat forming part of said venturi;

said outer venturi sleeve having a plurality of holes in communication with said plenum for flowing dilution air between the inner and outer venturi sleeves.

7. A combustion liner assembly according to Claim 4 wherein said outer venturi sleeve extends downstream from a venturi throat forming part of said venturi and a plurality of rivets interconnecting said liner sleeve and said outer venturi sleeve at spaced circumferential locations about said liner sleeve for minimizing leakage

flow of dilution air from the plenum and between the liner sleeve and outer venturi sleeve.

8. A combustion liner assembly according to Claim 7 wherein said rivets are at least ten in number about the liner sleeve and equally spaced from one another about the liner sleeve.

9. A combustion liner assembly according to Claim 7 wherein said rivets are at least twelve in number about the liner sleeve and equally spaced from one another about the liner sleeve.

10. A method of securing an annular venturi to and along an inside surface of a liner sleeve of a gas turbine combustor to eliminate or minimize dilution air leakage between the liner sleeve and venturi, the venturi having an annular flange extending in a generally axial direction, comprising the steps of:

- (a) forming a plurality of circumferentially spaced rivet holes about the liner sleeve;
- (b) locating the venturi within the liner sleeve with the flange aligned with the holes formed in the liner sleeve;
- (c) subsequent to step (b), forming holes through the venturi flanges using the holes formed through the liner sleeve as guides; and

- (d) riveting the liner sleeve and venturi flanges to one another by passing the rivets through the aligned holes.

11. A method according to Claim 10, including performing steps (a)-(d) in sequence and after step (b) and prior to step (c), tack-welding the venturi flange to the liner sleeve. <sup>outer wall</sup>

12. A method according to Claim 11, including welding heads of the rivets to the liner sleeve.

13. A method according to Claim 11 wherein the venturi has inner and outer sleeves terminating in overlapped flanges, and step (b) includes locating the venturi within the liner sleeve with the flanges aligned with the holes formed in the liner sleeve, step (c) includes forming holes through both flanges using the holes formed in the liner sleeve as guides and step (d) includes riveting the liner sleeve and flanges to one another by passing rivets through the aligned holes.